THE SPRUCE BARK BEETLE INFESTATION

in Northern Idaho and Western Montana

CONTROL AND SALVAGE PLANS

for 1958

Progress Report

January 1958

THE 1957 SPRUCE BARK BEETLE PROGRESS REPORT

AND

CONTROL AND SALVAGE PLANS FOR 1958

Subsequent to the origin of the spruce beetle infestation in 1952, annual surveys have been made to determine the volumes of spruce timber infested. The largest loss was recorded in 1953. During that year, the mature timber in many of the original 400 areas of pure spruce was severely attacked and depleted. Infestation trends are indicated in the following table extracted from a report 1/ prepared by the Missoula Forest Insect Laboratory.

	1952	1953	1954	1955	1956
Index of change on undisturbed areas 2/	1.0	1.9	1.6	0.6	0.2
Index based on volume killed on national forests 2/	1.0	1.4	0.9	0.5	0.3

No trend measurements were taken during 1957, but estimates made place the current infestation at about the same level as in 1956.

"Hot spots" of infestation continue in and adjacent to logged areas. The greatest losses are in stands that were partially cut by removing only infested trees. It appears that green stumps, green tops and injured trees provide sufficient host material with enough shade from "leave" trees to sustain brood development. This may necessitate clearcutting by small blocks instead of the selective cutting of only infested trees. Control action will be continued on all "hot spot" infestations.

Logging remains the only economical method of control for the spruce bark beetle. However, the logging for control is supplemental to the salvage program in many of the spruce areas. By the end of C.Y. 1957, about a billion and a half board feet of infested and salvable volume had been logged. Table I shows the volumes removed by logging from 1952 through 1957.

1/ Engleman Spruce Beetle Activity In the Northern Rocky Mountain Region 1957, By Tom T. Terrell, Entomologist

2/ 1.0 equals the volume of beetle-attacked spruce in 1952.

Table 1. - Spruce Logged from Eight Western Forest Units
(Million Board Feet)

Ownership	Year 1/	Infestation	Logging			
			Infested	Salvage & Dead	Green	Total
NF	1952	474	75	9	24	108
All other 2/		80	20	3	41	64
Subtotal		554	95	12	65	172
NF	1953	674	115	39	40	194
All other		111	49	18	33	100
Subtotal		785	164	57	73	294
NF	1954	405	204	86	58	348
All other		77	54	17	34	105
Subtotal		482	258	103	92	453
NF	1955	300	187	139	55	381
All other		41	9	22	20	51
Subtotal		341	196	161	75	432
NF	1956	178	93	168	66	327
All other		10	11	30	22	63
Subtotal		188	104	198	88	390
NF	July 1, 1957	146	34	44	33	111
All other	to	7	3	10	13	26
Subtotal	Dec. 31, 1957	153	37	54	46	137
NF	1952	2,177	708	485	276	1,469
All other	to	326	146	100	163	409
Subtotal	Dec. 31, 1957	2,503	854	585	439	1,878

Spruce beetle conditions within most of the wilderness areas remain about the same as previously reported. The infestations have run their courses. Most of the isolated pure spruce stands have "burned out." The spruce in the mixed types has, in general, been lightly infested.

No major control effort has been applied to these areas nor is any proposed at this time. However, they will be kept under observation.

1/ Production year July 1, 1952 to June 30, 1953.
2/ Private, state, and other non-national forest ownerships.

During the period July 1, 1956 to June 30, 1957, the spruce beetle control and salvage program for national forest lands cost $184,600. A summary follows:

Supervision, planning, reports and records -- DR, SO, and RO organizational levels	$36,400
Operational and maintenance surveys. Sales preparation over and above normal sales work	27,255
Designation of infestation areas, spotting infested trees, marking trap trees, and the checking of infested tree felling, treatment and logging	104,235
Forest Insect Laboratory surveys	16,235
Total	$184,125

In the current fiscal year (1958) the spruce beetle program on national forest land will require $125,000 for the same classes of work as indicated above.

The spruce bark beetle infestation is still epidemic in several large drainages on the Kootenai, Flathead and Kaniksu forests. Control action is also needed on several other forests where small "hot spots" have been reported in mature or overmature stands. It is estimated that during the period July 1, 1958 to June 30, 1959, it will be necessary to remove about the same amount of infested and dead spruce timber as was cut and salvaged in F.Y. 1958.

Although the spruce bark beetle infestation has greatly decreased in severity, we must continue maintenance surveys or periodically inspect drainages to detect new infestations in virgin and residual spruce stands. A continuation of the logging-for-control and salvage program must have adequate insect and volume data. These data are collected by operational survey.

The following is an estimate of our financial needs for control work on national forest lands for the ensuing year (fiscal year 1959 pest control funds):

Supervision, planning, reports and records -- DR, SO, and RO organizational levels	$25,000
Operational and maintenance surveys. Sales preparation of infested spruce over and above normal sales work	35,000
Designation of infested areas, spotting, marking, and checking of infested trees for logging	48,000
Forest Insect Laboratory survey (population trend, etc.)	7,000
Contingent for unforeseen revisions in the program	10,000
Total	$125,000

The following forest summaries contain statistical data and brief narrative statements of conditions for each national forest. The operating blocks referred to are subdivisions of the forests, such as large drainages with common bark beetle control problems. They are used for convenience in planning and reporting. The forest volumes were derived from an analysis of the spruce compartment in each block. The summaries give the infested spruce volumes and the volumes logged (for each production year) by ownership.

SUMMARY OF CONDITIONS, PROGRESS AND PLANS
(All Volumes in Million Board Feet)

CLEARWATER Forest

TOTAL SPRUCE VOLUME, (Nonreserved), July 1, 1952
N.F., 348.1; Non-N.F., 47.2; Total, 395.3

Production Year 1/	INFESTED SPRUCE VOLUME (Nonreserved)			
	Total Infested		Logged	
	N.F.	Non-N.F.	N.F.	Non-N.F.
1952	22.8	3.9	0	0.1
1953	47.9	8.0	1.2	0.4
1954	74.0	19.0	0.6	0.8
1955	38.8	6.7	1.9	2.8
1956	29.7	1.6	5.2	0.7
1957	10.0	.6	.4 2/	.2
Total	223.2	39.8	9.3	5.0

1/ Production year 1952 is from July 1, 1952 to June 30, 1953, etc.
2/ Estimated

Maintenance surveys were made in six of the major compartments in the Cedars Block in 1957. Surveys were confined to areas having relatively high percentages of green spruce and in unlogged portions of the Deception Creek and Osier Creek compartments. Increased beetle activity was noted only in Chamberlain compartment. In other areas, the 1957 infestation was about half the 1956 intensity. Logging of infested spruce and some salvage material is being continued in the Cedars sale area in Deception and Osier Creek.

Infestation in 1957 in two major spruce compartments of the Clearwater Block, Quartz Creek and Cold Springs, was spotty. Woodpeckers and other predators of the beetle are showing effect. A localized flare-up occurred in the Cold Springs compartment this year. Major effort was made to remove infested spruce and salvage material from Quartz Creek. About 2.5 million board feet of this material was removed. A blowdown was noted in 1956 in the Fish Creek compartment. Further examination this year indicated that the blowdown was minor and brood development was below normal.

Only aerial examinations were made this year in the Lochsa Block. Over 90 percent of the spruce volumes in the Selway-Bitterroot Wilderness Area and in the Gravey Creek compartment and adjacent drainages have succumbed to beetle attack. Damage to white pine by spruce bark beetles in Gravey Creek was less than in 1956. Whether there will be a buildup of mountain pine beetle in the weakened white pine remains to be seen.

SUMMARY OF CONDITIONS, PROGRESS AND PLANS
(All Volumes in Million Board Feet)
COEUR D'ALENE Forest

TOTAL SPRUCE VOLUME, (Nonreserved), July 1, 1952
N.F., 61.2; Non-N.F., 0; Total 61.2

Production Year 1/	INFESTED SPRUCE VOLUME (Nonreserved)			
	Total Infested		Logged	
	N. F.	Non-N.F.	N. F.	Non-N.F.
1952	6.1	0	1.6	0
1953	11.5	0	2.1	0
1954	4.6	0	4.5	0
1955	1.6	0	1.6	0
1956	2.0	0	2.0	0
1957	2.0	0	2.0 2/	0
Total	27.8	0	13.8	0

1/ Production year 1952 is from July 1, 1952 to June 30, 1953, etc.
2/ Estimated

The St. Regis District, which is all one block, is the only part of the Coeur d'Alene in the spruce beetle control program. Present condition of the units is as follows:

At present all spruce salvage sales in the Upper St. Regis-Rainy Creek area are closed and no sales are proposed for the immediate future. The spruce is nearly depleted except on the fringes where spruce comprises only a small percent of the stand. Infestation is very low.

A sale is presently in progress on the Dominion-Randolph area to remove infested and dead spruce, R/W timber and other timber, if necessary, to prevent loss. A heavy cut of spruce was planned on some areas because of infested and dead, but as of now, these areas will be almost clearcut because of creeping infestation by the beetles. When this sale is finished next year, the residual spruce will be in the mixed type.

The Twelve Mile compartment continues to maintain a low rate of infestation. Preparation of a sale for this area has begun, but it will not be a spruce salvage sale.

A sale is just being completed in the Big Creek (Middle Fork) drainage. Considerable more clearcutting was done than planned, because of infestation increase. As on other compartments, green spruce remains in the types where it is a small part of the total.

The amount of infestation in the upper end of the Big Creek (East Fork) drainage took a spurt upwards during 1955. In 1956, a sale was made on about 900 acres. When this sale is completed, there will be some area that is close to clearcut. Because the spruce is of a younger age class, the drainage will not appear as severely devastated as other compartments when the sale is completed. All spruce beetle control logging has ended in the North Fork-Little Joe Creek area. Practically the entire stand of spruce has been eliminated; some fringes and a few pockets near the state line remain.

SUMMARY OF CONDITIONS, PROGRESS AND PLANS

(All Volumes in Million Board Feet)

COLVILLE Forest

TOTAL SPRUCE VOLUME, (Nonreserved), July 1, 1952
N.F., 44.8; Non-N.F., 3.6; Total 48.4

Production Year 1/	INFESTED SPRUCE VOLUME (Nonreserved)			
	Total Infested		Logged	
	N. F.	Non-N.F.	N. F.	Non-N.F.
1952	0.9	Trace	0	0
1953	2.2	0.2	0.3	0.1
1954	4.4	0	0	0
1955	0.9	0	0.2	0
1956	0.5	0	0.2 2/	0
1957	0.5	0	0.3	0
Total	9.4	0.2	1.0	0.1

1/ Production year 1952 is from July 1, 1952 to June 30, 1953, etc.
2/ Estimated

Infestation in the Salmo Compartment was epidemic in 1953. Inspection shows no appreciable spread of the infestation and it is now considered endemic. Infestation in other compartments has not spread since 1954. Salvage of the trees killed by the spruce bark beetle in the Salmo area is not practical due to road construction costs.

SUMMARY OF CONDITIONS, PROGRESS AND PLANS

(All Volumes in Million Board Feet)

FLATHEAD Forest

TOTAL SPRUCE VOLUME, (Nonreserved), July 1, 1952
N.F., 1,095.7; Non-N.F., 293.0; Total 1,388.7

Production Year 2/	INFESTED SPRUCE VOLUME (Nonreserved)			
	Total Infested		Logged	
	N. F.	Non-N.F.	N. F.	Non-N.F.
1952	33.8	7.0 1/	2.0	0.5
1953	48.0	12.3 1/	6.8	2.0
1954	40.1	13.5 1/	25.2	5.7
1955	32.6	4.6 1/	31.4	0.8
1956	11.4	2.3	11.4	0
1957	12.0	1.5	11.0 3/	1.0
Total	177.9	41.2	87.8	10.0

1/ Includes nonnational forest ownership within the Mission Mountains Wild Area.
2/ Production year 1952 is from July 1, 1952 to June 30, 1953, etc.
3/ Estimated

Generally, the spruce bark beetle infestation forestwide was the same as in 1956. Continued infestations were generally confined to areas where control logging had been previously completed or where logging was still in progress. Only one new area was discovered with epidemic proportions that had not been previously noted.

The Glacier View Working Circle had the heaviest infestations on the forest, and Whale Creek continued to be the area of major infestation. The current sale in that area was able to clean up the new infestation. Small "hot spots" were found in Moose, Red Meadow, Tepee, Coal and Upper Big Creek in reserve strips where logging had been completed. Sales were made to control the infested areas. Kootah Creek was the one new area of infestation that had not been previously opened by logging.

Control measures by logging were effected on all areas of infestation in the Coram Working Circle except one. Sullivan drainage had continued attacks with the heaviest for the working circle. The 20-acre blowdown in the Aurora compartment continues to have endemic conditions, but is still under surveillance.

The Swan and Kalispell Working Circles had no serious spruce bark beetle problems during the past year.

SUMMARY OF CONDITIONS, PROGRESS AND PLANS

(All Volumes in Million Board Feet)

KANIKSU Forest

TOTAL SPRUCE VOLUME, (Nonreserved), July 1, 1952
N.F., 626.7; Non-N.F., 97.9; Total 724.6

Production Year 1/	INFESTED SPRUCE VOLUME (Nonreserved)			
	Total Infested		Logged	
	N. F.	Non-N.F.	N. F.	Non-N.F.
1952	47.3	11.1	6.4	4.7
1953	88.1	29.2	20.5	11.2
1954	24.3	1.6	22.9	8.0
1955	36.2	2.9	16.1	0.6
1956	16.5	1.1	15.5	0
1957	7.1	1.0	9.5 2/	1.0
Total	219.5	46.9	90.9	25.5

1/ Production year 1952 is from July 1, 1952 to June 30, 1953, etc.
2/ Estimated

During the 1957 season, surveys were made in ten compartments on which there had not been any logging. These compartments contain over 140 million board feet of spruce. In the past, the areas have shown spots of epidemic infestation. The results this year were very encouraging with all areas endemic. Cow Creek, with over 39 million board feet, had no infestation. Ball Creek, with over 25 million board feet, showed an infestation of .3%. Surveys were also run in six compartments where there had been previous logging and trap tree control work. These six compartments contain over 75 million board feet of spruce. The results of these surveys were also very encouraging. The Vermillion Compartment, with a volume of 19 million board feet, indicated no infestation. American Creek, with a stand in excess of 35 million board feet, showed an infestation of only 1.2%.

The results in the Canuck Creek and Continental areas are a different situation. The Canuck Creek area has the heaviest infestation on the forest. As a result, another large beetle control sale will be made this winter. The past logging and trap tree control work in this drainage has materially reduced the spread of infestation. No doubt if this work had not been accomplished, the entire drainage would have been lost by now. The first control sale in the Continental areas was not large enough to cover the area. A new control sale was made this fall.

In the Myrtle, Snow and Caribou Creek drainages, logging is progressing on both national forest and private lands. Snow Creek is now practically logged out. Most of the overmature spruce left in Myrtle Creek is now in the salvage category. The younger stands are endemic. In the Pack River drainage, there are still a few patches of uninfested mature timber. Sale activity is

is continuing on both national forest and private lands, being mostly salvage. Logging is still in progress in sixteen compartments.

Operations in the Lightning Creek drainage are now primarily a salvage program. However, a substantial amount of clean young timber is still left.

SUMMARY OF CONDITIONS, PROGRESS AND PLANS
(All Volumes in Million Board Feet)
KOOTENAI Forest

TOTAL SPRUCE VOLUME, (Nonreserved), July 1, 1952
N.F., 1,377.7; Non-N.F., 42.2; Total 1,419.9

Production Year 1/	INFESTED SPRUCE VOLUME (Nonreserved)			
	Total Infested		Logged	
	N. F.	Non-N.F.	N. F.	Non-N.F.
1952	249.0	1.5	57.4	1.5
1953	336.0	2.1	52.6	0.9
1954	142.6	1.8	94.6	1.8
1955	92.8	0	86.6	0
1956	50.0	0	47.0	0
1957	95.8	0	46.2 2/	0
Total	966.2	5.4	384.4	4.2

1/ Production year 1952 is from July 1, 1952 to June 30, 1953, etc.
2/ Estimated

Spruce bark beetle activity increased in 1957 when infested volumes advanced markedly over last year's totals. "Hot spots" continued to develop in the remaining pure spruce stands with major increases in the Wigwam and Pinkham Creek stands.

Logging-for-control received a setback when several advertised sales in heavily infested spruce areas were not sold. With decreasing lumber sales as the market softened, the demand for sawlogs lessened and resulted in a reduction of logging on several infested sale areas. Timber sales offered which produced no buyers were in Caribou and North Cyclone Creeks on the Yaak District and in Upper Porcupine Creek on the Rexford District.

Infested volumes which were not removed in 1957, plus recent blowdown spruce in and adjacent to logged areas, gives the Kootenai prospects of further infestations in 1958. Sales are planned as early as possible to salvage beetle infested, dead, and blowdown material to get a prompt removal of 1958 infested spruce.

The Rexford District reports 1957 infested spruce wherever stands were examined in the district. The largest new infestation has been in the Pinkham Creek drainage, where approximately 8,000 MBM of 1957 attacked spruce is being currently logged. This drainage contains the greatest volume of spruce remaining on the district. Attacks have been generally concentrated in pure spruce stands with small areas where up to 80 percent of the green spruce was infested in 1957. Other relatively small areas of spruce all have 1957 attacks which range from near zero up to 50 percent of the total spruce infested, with the average being close to 10 percent.

The heaviest infested spruce areas in the Wigwam showed volumes totaling 24,000 MBM, of which 7,500 MBM has been logged. The heavy attacks involve

Wigwam, Weasel, Clarence, Foundation, Deep Creeks and the Martin Lake area. Other spruce areas scattered over the Fortine District have infested volumes that more than equal the above figure. Nearly all of the spruce stands on the district had new beetle attacks in 1957.

Logging-for-control must continue at an accelerated rate to make up for 1957 reverses. A rising lumber market would be a great boost, but a continuing poor market will greatly hamper control and salvage efforts.

SUMMARY OF CONDITIONS, PROGRESS AND PLANS

(All Volumes in Million Board Feet)

LOLO Forest

TOTAL SPRUCE VOLUME, (Nonreserved), July 1, 1952
N.F., 476.8; Non-N.F., 291.9; Total 768.7

Production Year 1/	INFESTED SPRUCE VOLUME (Nonreserved)			
	Total Infested		Logged	
	N. F.	Non-N.F.	N. F.	Non-N.F.
1952	40.6	16.5	1.9	0.8
1953	63.1	27.3	15.6	10.8
1954	67.1	31.0	32.1	22.5
1955	47.6	17.0	38.6	4.0
1956	53.3	2.7	27.0	1.4
1957	16.4	3.5	4.7	1.7
Total	288.1	98.0	119.9	41.2

1/ Production year 1952 is from July 1, 1952 to June 30, 1953, etc.
2/ Estimated

Logging for control of spruce bark beetle has become a job of cleaning out the "hot spots" which have been developing due to a two year or longer life cycle at higher elevations. Except for the infested area in the Dry Creek Compartment, all areas of active infestation are being logged or are presently being developed for logging. The Fourth of July Creek sale in the Dry Creek compartment, containing in the neighborhood of ten million feet of infested and dead spruce, was advertised but did not sell and it is expected that this volume will be lost during the next insect flight. Elsewhere the epidemic is in retrograde development, some areas having been entirely lost, others considered saved by logging, and some reduced in severity by natural means.

It is expected that flare-ups will occur and need control action in various places. Most major sales have completed their control objectives and are changing over to the cut of other species. The cut of spruce will slack off next year and the demand will make possible the treatment of flare-ups. Considerable interest and experiment has gone into the salvage of dead spruce stands with varying results.

SUMMARY OF CONDITIONS, PROGRESS AND PLANS
(All Volumes in Million Board Feet)
ST. JOE Forest

TOTAL SPRUCE VOLUME, (Nonreserved), July 1, 1952
N.F., 346.3; Non-N.F., 172.4; Total 518.7

Production Year 1/	INFESTED SPRUCE VOLUME (Nonreserved)			
	Total Infested		Logged	
	N. F.	Non-N.F.	N. F.	Non-N.F.
1952	73.7	39.5	6.1	12.3
1953	76.7	32.2	15.6	23.3
1954	47.5	10.5	24.0	15.5
1955	50.0	9.3	10.3	0.3
1956	15.0	1.9	3.2	0.2
1957	2.0	0.8	0.6 2/	0.2
Total	264.9	94.2	59.8	51.8

1/ Production year 1952 is from July 1, 1952 to June 30, 1953, etc.
2/ Estimated

The St. Joe Forest was divided into three operating blocks at the beginning of the logging-for-control program. From these three blocks, 128 million board feet of spruce had been removed by December 31, 1957.

Spruce infestations have been very light during 1957. The early beetle-killed spruce has deteriorated beyond the point where it is salvable for lumber. It still has a value for pulpwood where markets exist.

The Fishhook-Little North Fork operating block contained the largest quantity of spruce on the forest. Practically all stands of spruce were heavily infested. To date, all those areas accessible have been logged or are in the process of being logged.

The principal spruce areas within the Lower St. Joe operating block are found in the Homestead, Daveggio, and Boulder compartments. These compartments were heavily infested early in the epidemic and were logged heavily. The Upper Marble Creek compartments, however, also contained considerable spruce but to date they have been relatively free of infestation.

Except for the Bluff Creek compartment, where 85 percent of the infested spruce volume has been removed, the remaining spruce volume in the Upper St. Joe operating block is located on the north side of the St. Joe River. In general, these stands are small in size and scattered over large areas, which result in low spruce volumes per acre. They are mostly inaccessible.